WHAT IS CLAIMED IS:

1. A method of processing a substrate having a low k dielectric material layer formed thereover, comprising:

    forming a titanium silicon nitride layer by chemical vapor deposition over the low k dielectric material layer; and

    depositing a copper seed layer over the titanium silicon nitride layer by physical vapor deposition.

2. The method of claim 1, wherein the titanium silicon nitride is formed at a substrate temperature between about 320°C and about 370°C.

3. The method of claim 1, wherein the titanium silicon nitride layer is formed to a thickness of between about 5 Å and about 100 Å.

4. A method of processing a substrate having a low k dielectric material layer formed thereover, comprising:

    depositing a titanium nitride layer over the low k dielectric material layer by providing a titanium-containing compound and a nitrogen-containing compound;

    soaking the titanium nitride layer in a silicon-containing gas ambient to form a titanium silicon nitride layer; and

    depositing a copper seed layer over the titanium silicon nitride layer by self-ionizing plasma physical vapor deposition.

5. The method of claim 4, wherein the titanium-containing compound is selected from the group including tetrakisdimethylamino titanium (TDMAT) and tetrakisdiethylamino titanium (TDEAT).

6. The method of claim 5, wherein the silicon-containing gas ambient comprises silane.

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7.   A method of processing a substrate having a low k dielectric material layer formed thereover, comprising:

depositing a titanium nitride layer over the low k dielectric material layer by providing a titanium-containing compound selected from the group including tetrakisdimethylamino titanium (TDMAT) and tetrakisdiethylamino titanium (TDEAT) and by providing a nitrogen-containing compound comprising ammonia;

soaking the titanium nitride layer in a silane ambient to form a titanium silicon nitride layer; and

depositing a copper seed layer over the titanium silicon nitride layer by self-ionizing plasma physical vapor deposition.